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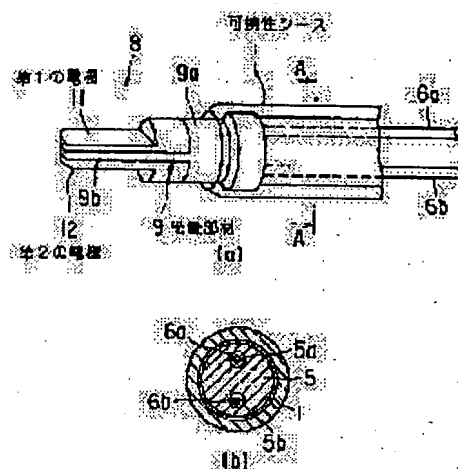
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(54) HIGH-FREQUENCY TREATING INSTRUMENT

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a high-frequency treating instrument capable of adhering an electrode to a living body organ even when approaching from a tangential direction to the living body organ, and surely solidifying and cutting the target portion of the living body organ.

SOLUTION: Inside a flexible sheath 1 inserted into a coelome, a first electrode 11 as a first conductive member and a second electrode 12 as a second conductive member are provided in opposing positions between an insulating member 9, and the first and second electrodes 11 and 12 and the insulating member 9 are moved back and forth in an axial direction relative to one another.



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CLAIMS

[Claim(s)]

[Claim 1] Said 1st conductivity member, 2nd conductivity member, and insulating member are a RF treatment implement characterized by the ability to move relatively to the shaft orientations of said flexible sheath while preparing in the location where the 1st conductivity member and the 2nd conductivity member counter on both sides of an insulating member inside the flexible sheath inserted into a coelome.

[Claim 2] Said 1st conductivity member, 2nd conductivity member, and insulating member are a RF treatment implement characterized by the ability to move relatively to the shaft orientations of said flexible sheath while the 1st conductivity member and the 2nd conductivity member are fixed in shaft orientations and the direction of a right angle on both sides of an insulating member inside the flexible sheath inserted into a coelome.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] For example it passes through this invention, it is endoscopically inserted into a coelome, and relates to the RF treatment implement which carries out the RF incision of the body tissue.

[0002]

[Description of the Prior Art] While preparing the electrode of a pair which consists of the 1st conductive member insulated by the insulating member inside the flexible sheath, and the 2nd conductive member and making the electrode of a pair project from the point of said flexible sheath, the RF treatment implement of the bipolar mold which carries out coagulotomy of the body tissue is known by pressing the high frequency current against inter-electrode [of a pair], and pressing the electrode of said pair against a sink and a body tissue.

[0003] As this bipolar type of RF treatment implement is known for JP,9-38103,A and shown in drawing 11 , nothing and the 2nd electrode b are formed for the 1st electrode a in the shape of a rod in tubed. Furthermore, the tubed insulating member c is formed in the inner skin of the 1st electrode a, and the 2nd electrode b is inserted in inside this insulating member c.

[0004] And in case the tip of the 2nd electrode b is ahead projected from the 1st electrode a and carries out coagulotomy of the body tissue A, it presses the tip of the 1st electrode a and the 2nd electrode b against a body tissue A, and it carries out coagulotomy by passing the high frequency current between [a and b] two electrodes.

[0005]

[Problem(s) to be Solved by the Invention] However, since the 2nd electrode b does not contact a body tissue A even if the 1st electrode a contacts a body tissue A when a body tissue A is approached from a tangential direction since the 1st electrode a is formed in tubed, said conventional RF treatment implement cannot carry out coagulotomy of the purpose part. And since it is cylindrical, when the 2nd electrode b is made to project from the channel of an endoscope, it has a possibility of thrusting into a body tissue A.

[0006] Even if it is the case where a body tissue is approached from a tangential direction, the place which this invention was made paying attention to said situation, and is made into that purpose can stick an electrode to a body tissue, and is to offer the RF treatment implement which can carry out coagulotomy of the purpose part of a body tissue certainly.

[0007]

[Means for Solving the Problem] In order that this invention may attain said purpose, said 1st conductivity member, 2nd conductivity member, and insulating member have claim 1 in the RF treatment implement characterized by the ability to move relatively to the shaft orientations of said flexible sheath while forming it in the location where the 1st conductivity member and the 2nd conductivity member counter on both sides of an insulating member inside the flexible sheath inserted into a coelome.

[0008] Said 1st conductivity member, 2nd conductivity member, and insulating member have claim 2 in the RF treatment implement characterized by the ability to move relatively to the shaft orientations of said flexible sheath while the 1st conductivity member and the 2nd

conductivity member are fixed in shaft orientations and the direction of a right angle on both sides of an insulating member inside the flexible sheath inserted into a coelome.

[0009] According to said configuration, coagulotomy of the body tissue is carried out by pressing a sink and both the conductivity member against a body tissue for the high frequency current between the 1st conductivity member and the 2nd conductivity member.

[0010]

[Embodiment of the Invention] Hereafter, the gestalt of implementation of this invention is explained based on a drawing. The decomposition perspective view of a point and drawing 4 of the sectional view where drawing 1 - drawing 4 show the 1st operation gestalt, in drawing 1 the side elevation of the whole RF treatment implement and drawing 2 (a) meet the perspective view of a point, and (b) meets the A-A line of (a), and drawing 3 are the side elevations of a busy condition.

[0011] As shown in drawing 1, the control unit 2 is formed in the end face section of the flexible sheath 1 inserted into a coelome. The ring-like fixed digit credit section 3 and the slider member 4 which has fingerplate hole 4a are formed in this control unit 2, and the guide member 5 inserted in free [an attitude] is connected in the flexible sheath 1 at this slider member 4.

[0012] 1st lumen 5a and 2nd lumen 5b are prepared in the guide member 5 at shaft orientations, 1st conductive wire 6a is inserted in the 1st lumen 5a, 2nd conductive wire 6b is inserted in the 2nd lumen 5b, and the 1st and 2nd conductive wires 6a and 6b are connected to the electrode plugs 7a and 7b prepared in the slider member 4.

[0013] As shown in drawing 2 and drawing 3, the tip treatment section 8 is formed in the point of said guide member 5. If the tip treatment section 8 is explained, the insulating member 9 formed, for example of the ceramic has cylinder section 9a in the end face section, and has pars-plana 9b which passes along the axial center of cylinder section 9a in a point.

[0014] Pars-plana 9b is avoided to cylinder section 9a of an insulating member 9, the 1st and the 2nd through tube 10a and 10b are drilled by shaft orientations, and major diameter 10c is prepared in the end face section of both the through tubes 10a and 10b. Furthermore, on both sides of pars-plana 9b, the 1st electrode 11 as the 1st conductivity member and the 2nd electrode 12 as the 2nd conductivity member are formed in both sides. The 1st and 2nd electrodes 11 and 12 have the shape of flat [of the same configuration as pars-plana 9b], the padding sections 11a and 12a are formed in the end face section, and the 1st, the 2nd through tube 10a and 10b, and the tapped holes 11b and 12b that counter are drilled in these padding sections 11a and 12a.

[0015] And the 1st and 2nd electrodes 11 and 12 are being fixed by the lockscrews 13 and 14 as a connection member which is inserted in superposition and the 1st and 2nd through tubes 10a and 10b on both sides of pars-plana 9b of an insulating member 9, and is thrust into tapped holes 11b and 12b. that is, the 1st and 2nd electrodes 11 and 12 can draw near to the padding sections 11a and 12a of an insulating member 9 by the bell and spigot of lockscrews 13 and 14, it is fixed, and the 1st and 2nd electrodes 11 and 12 are flat on both sides of an insulating member 9 — a knife — it is formed in the **.

[0016] Furthermore, the wire connection holes 13a and 14a are formed in the head of lockscrews 13 and 14, said 1st and 2nd conductive wires 6a and 6b are inserted in these wire connection holes 13a and 14a, and it is fixed by electroconductive glue.

[0017] Therefore, the 1st and 2nd conductive wires 6a and 6b are connected to the 1st and 2nd electrodes 11 and 12 through lockscrews 13 and 14 at electric switch-on. And since it is fixed to the guide member 5, the tip of the flexible sheath 1 to **** is free for the tip treatment section 8 by attitude actuation of the slider member 4 of a control unit 2.

[0018] Next, an operation of the 1st operation gestalt is explained. The guide member 5 is retreated, by the slider member 4 of a control unit 2, where the tip treatment section 8 is engrossed in the flexible sheath 1, the flexible sheath 1 of a high frequency treatment implement is inserted in the forceps channel of an endoscope etc., it passes and a high frequency treatment implement is endoscopically inserted into a coelome. Next, the guide member 5 is advanced and the tip treatment section 8 is made to project from the tip of the flexible sheath 1 by the slider member 4. And as shown in drawing 4, the purpose part of a body tissue A is

approached in the tip treatment section 8. If the RF generator and the electrode plugs 7a and 7b which are not illustrated are connected electrically and the high frequency current is passed, the high frequency current will flow between the 1st and 2nd electrodes 11 and 12 through the 1st and 2nd conductive wires 6a and 6b. In this condition, if the tip treatment section 8 is pressed against a body tissue A, the 1st and 2nd electrodes 11 and 12 will stick to a body tissue A, and coagulotomy of the body tissue A will be carried out.

[0019] in this case, the 1st and 2nd electrodes 11 and 12 of the tip treatment section 8 are flat on both sides of an insulating member 9 — a knife — since it is formed in the **, even if it approaches a body tissue A from a tangential direction, the 1st and 2nd electrodes 11 and 12 can make it stick to a body tissue A, and can carry out coagulotomy of the purpose part certainly.

[0020] In addition, in this operation gestalt, although the 1st and 2nd electrodes 11 and 12 were fixed to the insulating member 9 by lockscrews 13 and 14 as a connection member, it is not limited to lockscrews 13 and 14, but a contact pin may be fixed to the 1st and 2nd electrodes 11 and 12 with electroconductive glue.

[0021] Moreover, although the wire connection holes 13a and 14a were formed in the head of lockscrews 13 and 14, the 1st and 2nd conductive wires 6a and 6b were inserted and it connected with electroconductive glue A thread part may be prepared in the point of the 1st and 2nd conductive wires 6a and 6b, you may thrust and connect with the wire connection holes 13a and 14a, and the 1st and 2nd conductive wires 6a and 6b may be directly connected to the 1st and 2nd electrodes 11 and 12.

[0022] In addition, when the tip treatment section 8 of the 1st and 2nd electrodes 11 and 12 or insulating member 9 grade is damaged by connecting the lock screw 13 and 14, 1st, and 2nd conductive wires 6a and 6b removable, it becomes possible to dissociate from a connection with the lock screw 13 and 14, 1st, and 2nd conductive wires 6a and 6b, and to exchange for a new thing.

[0023] Moreover, by making an axial center pivotable as a core for the guide member 5 to a control unit 2, the tip treatment section 8 can be turned in the direction of arbitration, and it can respond to the configuration of the incision purpose part of a body tissue A.

[0024] Drawing 5 shows the 2nd operation gestalt and is the decomposition perspective view of the tip treatment section 20. Explanation of this tip treatment section 20 forms the insulating member 21 formed, for example of the ceramic in the shape of flat. The 1st electrode 22 as the 1st conductivity member and the 2nd electrode 23 as the 2nd conductivity member are formed in the both sides of an insulating member 21. The 1st and 2nd electrodes 22 and 23 have the shape of flat [of the same configuration as an insulating member 21], the padding sections 22a and 23a are formed in the end face section, and thread parts 22b and 23b are formed in the peripheral face of these padding sections 22a and 23a. Furthermore, tapped holes 22c and 23c are drilled in the back end section of the padding sections 22a and 23a.

[0025] And on both sides of the insulating member 21, as for the 1st and 2nd electrodes 22 and 23, the stop ring 24 which has female screw section 24a at inner skin in the thread parts 22b and 23b of superposition and the padding sections 22a and 23a is screwed. that is, the 1st and 2nd electrodes 22 and 23 piled up so that an insulating member 21 might be pinched with a stop ring 24 are combined, and flat by the 1st and 2nd electrodes 22 and 23 and insulating members 21 — a knife — it is formed in the **.

[0026] Furthermore, the thread parts 25a and 26a prepared in the point of the 1st and 2nd conductive wires 25 and 26 are thrust and connected to the tapped holes 22c and 23c of the 1st and 2nd electrodes 22 and 23.

[0027] According to this operation gestalt, since it is combined with one stop ring 24, an assembly tends to have three-sheet superposition structure of the 1st and 2nd electrodes 22 and 23 and an insulating member 21, and structure is easy and can aim at a cost cut.

[0028] Drawing 6 - drawing 9 show the RF treatment implement which has the loop-formation-like tip treatment section, and the same component as the 1st operation gestalt attaches the same number, and omits explanation. The decomposition perspective view of the tip treatment section and drawing 9 of the sectional view where in drawing 6 the side elevation of the whole

RF treatment implement and drawing 7 (a) meet the vertical section side elevation of the tip treatment section, and (b) meets the B-B line of (a), and drawing 8 are busy condition Figs. [0029] As shown in drawing 6 and drawing 7, the 1st and 2nd conductive members 33 and 34 are inserted in the 1st and 2nd lumens 32a and 32b of the multi-lumen tube 31 which has flexibility free [the attitude to shaft orientations].

[0030] The bending sections 33a and 34a bent in the direction which faces mutually the point of the 1st and 2nd conductive members 33 and 34 are formed, and the connection holes 33b and 34b are drilled in the end face of the bending sections 33a and 34a. Moreover, it is insulating members, such as a ceramic, and this insulating member 35 is the block of the same cross-section configuration as the 1st and 2nd conductive members 33 and 34, and, as for 35, the thread parts 36a and 36b by which insertion connection is made are formed in both ends at the connection holes 33b and 34b. Therefore, the loop-formation-like section 37 is formed of the 1st and 2nd conductive members 33 and 34 and insulating members 35.

[0031] As shown in drawing 9, in excising the polyp B which upheaved to a part of body tissue A according to the RF treatment implement constituted as mentioned above, it can carry out RF excision of the polyp B by hooking the loop-formation-like section 37 on Polyp B, and passing the high frequency current between the 1st, and the 2nd conductive member 33 and 34.

[0032] as shown in drawing 10, when it projects from the multi-lumen tube 31 by considering as the configuration to which it bent in the direction which extends the 1st and 2nd conductive members 33 and 34 outside, and Peculiarities 33c and 34c were attached, in order that [in addition,] the loop-formation-like section 37 may carry out opening of the configuration of the loop-formation-like section 37 of a RF treatment implement greatly — the big polyp B — a RF — it becomes resectable.

[0033] According to said operation gestalt, the following configurations are obtained.

(Additional remark 1) Said 1st conductivity member, 2nd conductivity member, and insulating member are a RF treatment implement characterized by the ability to move relatively to the shaft orientations of said flexible sheath while preparing in the location where the 1st conductivity member and the 2nd conductivity member counter on both sides of an insulating member inside the flexible sheath inserted into a coelome.

[0034] (Additional remark 2) Said 1st conductivity member, 2nd conductivity member, and insulating member are a RF treatment implement characterized by the ability to move relatively to the shaft orientations of said flexible sheath while the 1st conductivity member and the 2nd conductivity member are fixed in shaft orientations and the direction of a right angle on both sides of an insulating member inside the flexible sheath inserted into a coelome.

[0035] (Additional remark 3) Said 1st conductivity member and the 2nd conductivity member are a RF treatment implement the additional remark 1 characterized by connecting with the 1st conductive wire and the 2nd conductive wire which were inserted in the shaft orientations of a flexible sheath removable, or given in two.

[0036] (Additional remark 4) the tip treatment section of 3 layer structures which consist of the 1st conductivity member piled up on both sides of said insulating member and the 2nd conductivity member is flat — a knife — a RF treatment implement the additional remark 1 characterized by being a **, or given in two.

[0037] (Additional remark 5) The 1st conductivity member piled up on both sides of said insulating member and the 2nd conductivity member are a RF treatment implement the additional remark 1 characterized by being combined with one stop ring, or given in two.

[0038]

[Effect of the Invention] As explained above, even if it is the case where a body tissue is approached from a tangential direction by considering as the structure where the 1st conductivity member and the 2nd conductivity member counter the tip treatment section on both sides of an insulating member according to this invention, both the conductivity member can be stuck to a body tissue, and it is effective in the ability to carry out the coagulotomy of the purpose part of a body tissue certainly.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The side elevation of the whole RF treatment implement showing the 1st operation gestalt of this invention.

[Drawing 2] It is the sectional view where this operation gestalt is shown, (a) meets the perspective view of the tip treatment section, and (b) meets the A-A line of (a).

[Drawing 3] This operation gestalt is shown and it is the decomposition perspective view of the tip treatment section.

[Drawing 4] The side elevation of the busy condition of this operation gestalt.

[Drawing 5] The decomposition perspective view of the tip treatment section showing the 2nd operation gestalt of this invention.

[Drawing 6] The side elevation of the whole RF treatment implement which shows the example of an indication and has the loop-formation-like tip treatment section.

[Drawing 7] It is the sectional view where this example of an indication is shown, (a) meets the vertical section side elevation of the tip treatment section, and (b) meets the B-B line of (a).

[Drawing 8] The decomposition perspective view of the tip treatment section of this example of an indication.

[Drawing 9] The busy condition Fig. of this example of an indication.

[Drawing 10] The top view of the loop-formation-like section showing the modification of the example of an indication.

[Drawing 11] The vertical section side elevation of the busy condition of the conventional RF treatment implement.

[Description of Notations]

1 — Flexible sheath

8 — Tip treatment section

9 — Insulating member

11 — The 1st electrode (the 1st conductivity member)

12 — The 2nd electrode (the 1st conductivity member)

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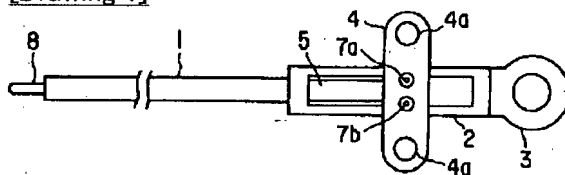
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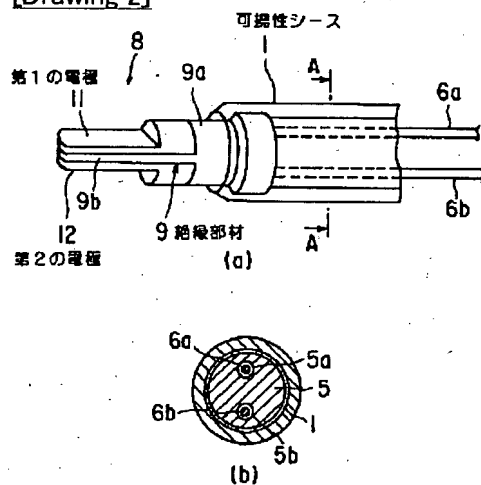
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DRAWINGS

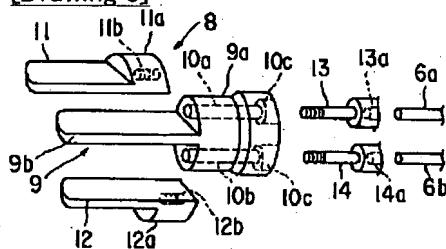
[Drawing 1]



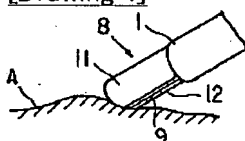
[Drawing 2]



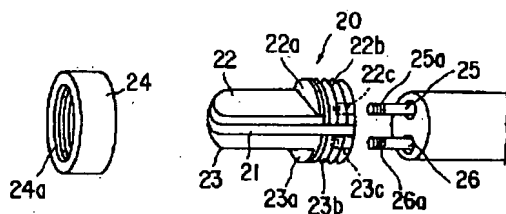
[Drawing 3]



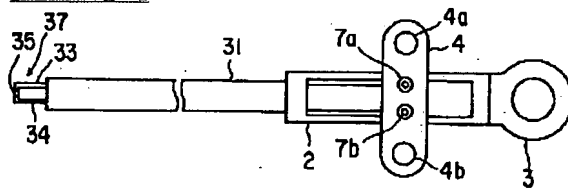
[Drawing 4]



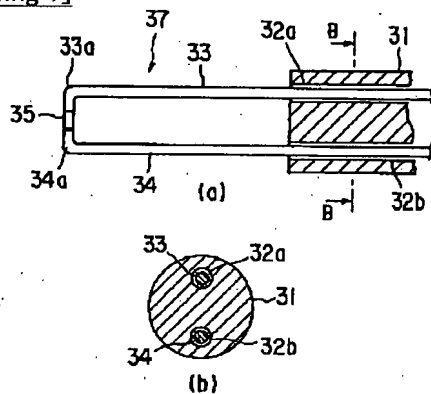
[Drawing 5]



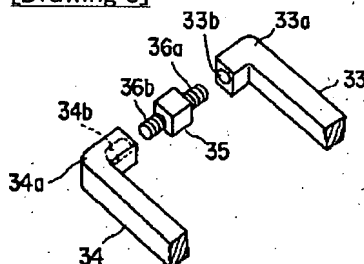
[Drawing 6]



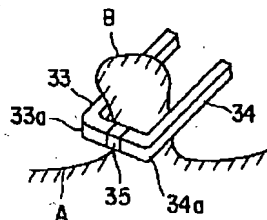
[Drawing 7]



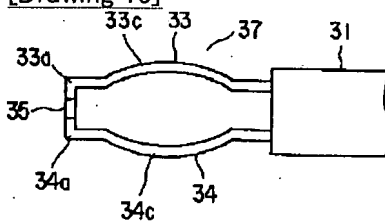
[Drawing 8]



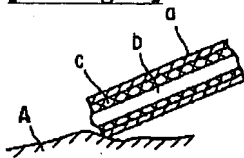
[Drawing 9]



[Drawing 10]



[Drawing 11]



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